MERCHANDISING SUPPLEMENT
Electricity on the Farm

Vol. 3 OCTOBER, 1930 No. 10

Big Business

The development of the electric farm market (in which you are playing a part no matter whether you are building the lines or selling farm machinery or household appliances) is truly "Big Business," a billion dollar business.

One million American farms are sure to be electrified in a few years. There are now 627,000—68,532 of which have been connected in the last six months.

The cost of these farm lines alone will exceed $500,000,000, not including transformers, substations and additional generating equipment which will be required.

A million farms will require purchase by farmers of $1,000,000,000 worth of equipment, to justify the construction of 333,000 miles of rural electric lines.

Where do your farmers stand? If they haven't at least $1,000 worth of electric farm equipment apiece, it's more than likely your own fault. You show them the need and they'll find the money. And when they get that much they'll be easy to sell the other labor saving appliances.

To help you do your job we have inaugurated this month a new editorial feature—a Rural Electric Salesmen's Forum (see page S 2). Don't miss this and future issues.

RURAL ELECTRIFICATION Salesmen's Forum

Selling the Farmer a Motor-Driven Feed Grinder

THE grinding of grain for farms in the United States comprises one of the very important tasks to which electric power may now be readily applied. Two items are of particular importance to the man interested in the sale of a grinder to be operated by an electric motor. The first should be whether the farmer is feeding grain to livestock which should be ground and the second whether the farmer can advantageously grind at home.

Grinding Data Available

The first item is one which at the present time can scarcely be answered by experiment for all kinds of grain which may be fed to all classes of livestock. However, many experiments have been conducted and results are now available on the value of grinding various grains for many kinds of animals. This article will not attempt to list all of the results secured but will mention some of those which pertain to the more commonly used grains for livestock which are found generally over the entire United States. It is suggested that where certain grains are not mentioned that rural service men or implement dealers communicate with their State Agricultural Experiment Stations.

The dairy cow is probably the most universal domestic animal in the entire country and one for which grain must be ground. For many years the grinding of grain has been practiced by good dairymen. During 1926 and 1927 experiments conducted at Purdue University definitely established the value of grinding shelled corn and oats for dairy cows.

The results of the feeding trials were published in the issue of April, 1928, of *Electricity on the Farm*, but will be repeated here because of the widened circulation of the magazine since the previous appearance of the material. Copies of the complete results may be secured by writing the Agricultural Experiment Station, Purdue University, Lafayette, Indiana, for stencil bulletin No. 3, issued December, 1927.

The sizes of screens used were for coarsely ground, corn 11/16-inch screen, oats 7/16-inch screen; medium ground, corn ⅛-inch screen, oats ¼-inch screen; finely ground corn and oats 1/32-inch screen.

Wheat is seldom fed to dairy

Results of Feeding Trials

	Whole Grain	Cracked or Crushed Grain	Medium Ground Grain	Pulverized (Finely Ground Grain)
Milk Production	8,975.10 lb.	9,524.10 lb.	10,114.30 lb.	9,564.30 lb.
Returns @ $2 cwt.	$179.50	$190.48	$202.29	$191.29
Feed Cost	125.27	124.47	123.87	124.31
Grinding Cost	....	.98	1.36	13.48
Total Cost (Feed and Grinding)	125.27	125.45	125.23	137.79
Returns above cost	54.23	65.03	77.06	53.50
Cost per cwt. milk	1.39	1.32	1.24	1.44
Average gains in weight (per 21-day period)	10 lb.	23 lb.	22 lb.	19 lb.

cattle but when used should be coarsely ground. Soybeans are being used more extensively through the Corn Belt to furnish the protein concentrate in the grain ration for dairy animals and should be ground. Barley when included in the dairy ration should likewise be ground.

The economy of grinding grain for fattening cattle is not as easy to predict as that for dairy cattle. In a series of trials at the University of Missouri, it was found that cattle made faster gains on ground than unground grain. However, it was found to be more profitable to feed the whole corn because the hogs following them made more economical gains when it was fed. This combination of hogs and cattle showed greater efficiency in utilization of the unground grain, even though the cattle had utilized the ground grain more efficiently than the whole grain. Prices of corn, cattle, and hogs usually determine the practice to be followed.

Results of Purdue Tests

The results of four years tests on the feeding of ground or whole oats to fattening cattle at the Purdue University Agricultural Experiment Station from September, 1926 to April, 1930 show the value of grinding oats. During the past two years, three sizes of screens were used ¼-inch, ⅛-inch, and 1/16-inch to obtain various degrees of fineness for the oats ground. During both years oats ground through ¼ and ⅛-inch screens have afforded greater and more economical gains than have the whole oats. During the first year slightly larger gains were shown for whole oats than for those ground through the 1/16-inch screen, but this was reversed the second year. During both years the gains made were less economical for the finely ground than for the whole oats possibly because of the high cost of grinding. Mimeographed reports of these feeding trials are available from the Agricultural Experiment Station at Lafayette, Indiana.

Results of experimental feeding reported in Bulletin 106 of the Iowa Agricultural Experiment Station issued in 1909 showed no advantage in grinding corn for growing fattening hogs. However, hogs weighing 200 pounds at the start of the experiment showed faster gains on the ground than the unground grain.

The grinding of oats for hogs has been shown to be profitable when they were fed with corn in tests made at the Agricultural Experiment Stations in Iowa, Illinois, and Indiana. In tests at the last station located at Purdue University one year's tests on fineness of grinding show that the greatest and most economical gains were obtained where the oats were ground through a ⅛-inch screen. This fineness was compared to those obtained through ¼ and 1/16-inch screens.

Feeding tests conducted by the Ohio and Indiana Agricultural Experiment Stations show that the grinding of soybeans is not a profitable one where the beans are fed to hogs. Grinding is advisable in some cases since the pigs can be forced to take more soybeans when they are ground and mixed with other feeds, where they do not eat a sufficient quantity to supply the protein necessary for optimum growth.

Grinding grains for sheep and lambs is based almost entirely on a matter of experience. No experimental results are available to guide the feeder in his work. One year's work has been completed at Purdue University on the feeding of oats ground to different degrees of fineness to lambs. Whole oats are being compared in feeding value to oats, ground through ¼, ⅛, and 1/16-inch screens, and the experiment is to continue through two additional feeding trials.

Poultry Feeding Practices

Grinding grain for poultry has received a decided stimulus since the advent of the all-mash ration for baby chicks. Numerous experiments combined with experience are responsible for the remarkable growth of this practice. For most sections the all-mash ration is partially replaced by whole or cracked grains when the birds reach the age of 12 weeks. The use of a scratch grain is then continued and

used even after the birds are in production. Experiments conducted at Ohio Experiment Station indicate the feasibility of using an all-mash ration for layers but this practice has not been very generally adopted. The use of whole grain enables the experienced feeder to better control production and growth and it will undoubtedly never be entirely replaced by all-mash feeding. However, the need for grinding has become well established through the use of the mash for chick feeding as well as the laying mash.

Know Your Product

The second item of importance with which the salesman should be familiar is the product which he is selling, power required to operate it with various equipment, such as, blower or bagger, ear corn breaker, etc., capacity of the grinder for various grains at different finenesses and methods of installation for many conditions. Knowing these things and the desirability of grinding grain for various livestock, he can easily determine from assessor's figures or from other sources the amount of livestock kept by the individual farmer and consequently the amount of grinding which should be done. If possible, further, to determine whether the farmer grows his own grain and if so how it is ground if at all, he may be able to determine without a visit the need for a grinder on that particular farm.

It may be easier for the salesman to make a visit to the farm to secure the information above to be used in determining the posibility of the farmer as a customer. When such a trip is made, the distance from the nearest satisfactory grinder, means of transportation to the mill of the farmer, and price paid per unit ground could be ascertained if such information has not already been secured. The above data should enable the salesman to determine very definitely whether or not the farmer can use a feed grinder advantageously.

In determining the size grinder necessary for his prospect, the salesman should consider present and future grinder capacity which may be required, for a satisfied farm customer is always a good advertiser and a dissatisfied customer usually a better one of the reverse order. An illustration of this came to attention when the results of a survey conducted on feed grinders by an agricultural engineer at Purdue University showed that a farmer with a $275 grinder used it during one year to grind 220 bushels of grain. Obviously a customer of that sort would be far from satisfied had he known that the same company sold a smaller grinder which was adequate for his needs.

When the salesman has decided whether the farmer has advantageous use for a mill, it is well to discuss with him on the ground methods of installation designed to minimize the labor required in grinding. Frequently the salesman may be able to close the sale on the strength of his knowledge of proper installation of the grinder. In order that readers of this article may know some of the methods used for installation of motor-driven grinders at the present time, a short description has been included.

The location of a motor-driven feed grinder on the farm is affected by several factors. The construction and location of grain bins and corncribs, location of bins for ground grain, and construction and equipment of the building in which the grinder is to be used, all affect its location.

Equipment Layout Important

A considerable amount of labor is saved in the type of installation where the grinder is located under the grain bins and corn or other grain is fed into the mill by gravity. This installation is probably the most efficient from the standpoint of saving labor. It does necessitate the use of an elevator or blower to raise the grain into the overhead bin.

Other labor-saving methods of installation are often used in supplying grain to the grinder. In one case, an inexpensive box holding 15 bushels increased the capacity of the hopper on the grinder and eliminated the necessity for constant attention to filling it. In

(*Continued on page* 11)

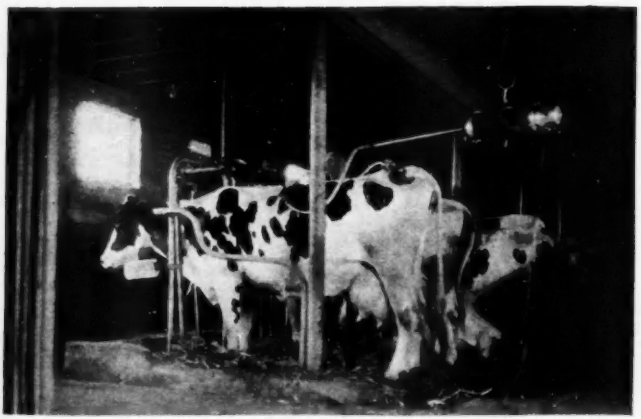
Wiring the Farm

BY R. BOONSTRA*

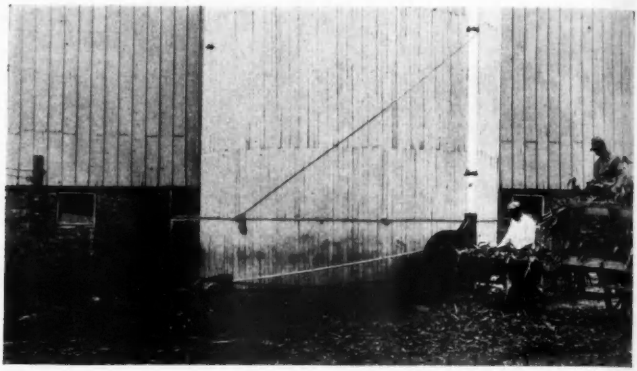
This 1 H.P. motor has replaced a gasoline engine. It pumps water to the barn and to a storage tank in the farm home. Mr. Smith says this is much easier on the hands, and better for the disposition than the previous way.

WE have for some time given considerable thought to the matter of properly wiring the farmer's premises, being ever-mindful of the electric wiring contractor's interests as well as those of the farmer. In the public utility business the electrical wiring contractor plays a most important part; and while he tries to give the farmer an adequate wiring installation, he is often handicapped by the short time he has to properly sell the farmer on adequate wiring.

As a result of a study of farm wiring, we decided to have each farm electrification man make up two wiring plans for every farmer—one for the company's files; the other for the farmer. In the making up of this plan, the farmer actually visualizes the uses which he will be able to make of electrical equipment, provided his premises are properly wired, with the result that the farmer seems thoroughly sold on adequate wiring through the medium of this wiring plan and the farm electrification salesman. After all, if the farmer is completely sold on it himself, the wiring contractor's job becomes very easy, and there will be very little tendency on the part of the farmer to keep his wiring costs



Proper location of outlets for the various tasks about the barn is essential



The chore motor can accomplish many other tasks beside silo filling if the wiring system is properly laid out

to a minimum at the time he lets the wiring contract.

The plan has another very valuable use in that the farm electrification salesman can consistently call on the farmer's premises, enabling the salesman to render the farmer a real service which he appreciates, and which later is reflected in the sale of electrical equipment.

Instill Confidence

After the farm electrification salesman has worked hard in carefully laying out the wiring plan, he has instilled into the farmer a great deal of confidence, and made the farmer realize that wiring his premises is not just a hurried affair to which little thought need be given, but one which is most important. We also find that the farmers are now using those plans in reviewing their prospective wiring with the electrical contractors, and that they create a mutual good feeling between utility companies, the wiring contractors, and the farmers.

*Agricultural Engineer, Public Service Company of Northern Illinois.

"Mother, may I go out to swim?"
"Yes, my darling daughter."
But she hung her clothes on some shapely limbs,
And didn't go near the water.

C. R. E. A. Meeting Held at Chicago

Rural Electrification Handbook Being Developed; Committees Report; List of Attendance

The Seventh Annual meeting of the Committee on the Relation of Electricity to Agriculture was held at the Sherman Hotel, Chicago, Ill., on July 23rd, 1930.

Plans contemplated by the Committee as a means of furthering the use of electric service include the development of material for a C. R. E. A. handbook.

Preliminary Data Available

In accordance with the action taken by the Committee at its 6th annual meeting, a great deal of attention has been given to the development of material for a C. R. E. A. handbook. Assistant Director, Lee C. Pricket, was placed in charge of the editorial work. Preliminary handbook material on ensilage cutters has been prepared by Prof. F. W. Duffee of the University of Wisconsin, and a limited edition has been printed and distrtibuted by the Committee.

The report of the investigation work under way on state projects,

(*Continued on page* 8)

Rural Service Men Meet at Rochester

A MEETING of the Rural Business Committee was held at the Rochester Gas & Electric Corporation's Building in Rochester, July 25, 1930, H. C. Fuller acted as chairman.

List of Attendance

The following were in attendance: B. W. Faber, Westinghouse Electric, East Pittsburgh; L. H. Hammond, Westinghouse Electric, Buffalo; A. P. Danz, General Electric Company, New York City; C. N. Moore, General Electric Company, Schenectady; E. W. Pilgrim, General Electric Company, Schenectady; G. A. Rietz, General Electric Company, Schenectady; Morris H. Lloyd, Buffalo, Niagara & Eastern Power Corp., Buffalo; J. E. Keib, Northern N. Y. Utilities, Watertown; R. G. Harvey, Syracuse Lighting Co., Inc., Syracuse; W. W. Jurden, Cortland County Traction Co., Cortland; K. H. Gorham, *Electricity on the Farm*, New York City; H. C. Fuller, Utica Gas & Electric Co., Utica; L. S. Caple, Rochester Gas & Electric Corp., Rochester; G. C. Brooks, Empire Gas & Electric Co., Geneva; C. H. B. Chapin, Empire State Gas & Electric Asso., New York City; M. W. Nixon, Empire State Gas & Electric Asso., New York City; W. D. Tiedeman, guest N. Y. State Dept. of Health, Albany; D. L. Collins, guest N. Y. State Agric. Expt. Sta., Geneva; R. F. Bucknam, guest Public Service Commission, Albany.

Discussions and Reports

J. E. Keib of the Northern New York Utilities discussed Reforestation. This company started reforestation 20 years ago with the object of deriving a revenue from cut over and abandoned farm land.

Mr. W. D. Tiedeman of the New York State Department of Health presented a paper entitled "Mobile Milk Testing Laboratory" in which he described two bacteriological laboratories installed in motor busses to test milk at receiving stations by direct microscopic methods to determine the causes of contamination.

Donald L. Collins, of the Geneva, New York, Agricultural Experiment Station quoted the abstract from Bulletin No. 583 on light traps and read a paper on progress observed this summer on the Hilton light trap project. Maurice Nixon reported on the possibilities of getting better color on the fruit by use of artificial light.

L. S. Caple reported on stationery sprayers and distributed a table on pressure loss and a descriptive folder prepared by "Friend" Mfg. Co., Gasport, N. Y.

Mr. C. H. B. Chapin reported on a forced draft stump burner. Stumps are burned with the aid of a household vacuum cleaner.

M. W. Nixon gave a summary of the recent C. R. E. A. State Project Directors' meeting at Moline.

There was a general discussion of the Complete Farm Shop. It was decided to appoint a committee to look up the possibilities of shop equipment and report.

Equipment Exhibited and Described

Ben. W. Faber exhibited the Westinghouse ¼-H.P.portable motor with removable base and sentinel breaker. He also mentioned the speed reducer made at Springville.

W. W. Jurden exhibited and described the new cast aluminum water heater or dairy utensil sterilizer sold by the Cortland County Traction Company. The tank is 94% aluminum and is made by the M. L. Oberdorfer Brass Company of Syracuse. Steel tanks had been subject to rust.

R. G. Harvey reported he and Prof. Fairbanks of the College of Agriculture hope to have the report on electric ranges completed by the next meeting.

The Committee dined at the Sagamore Hotel as guests of the Rochester Gas & Electric Corporation. It was decided to hold the next meeting just preceding the A. S. A. E. North Atlantic Section meeting at the Hotel Seneca, morning, afternoon and evening of October 15th.

Electric Hot Water for Scalding Milk Pails

A new device, designed and built under the supervision of the Cortland County Traction Company for the use of its farm customers, is now available to all dairymen. It is called the "Electro-Scald" and consists of an Aluminum Tank with a curved bottom, which is just the right size in which to wash milk pails, strainers and the like. The manufacture and sale have been taken over by M. L. Oberdorfer Brass Co., Syracuse, N. Y.

With this outfit 5 gallons of water may be heated to scalding temperature in one hour (while the milking is being done) and then pails, strainers, etc., after being rinsed in cold water can be rolled in this scalding water and put directly on the racks in the milkroom.

A 2-KW. 220-volt (or 110 v.) electric heating element in the bottom of the tank does the heating and it keeps the water hot while it is being used.

This outfit is also useful for preparing powdered skim milk calf rations and for scalding chickens.

The operating cost is about 1c. per gallon with electricity at 3c. per kilowatt-hour.

C. R. E. A. Meeting

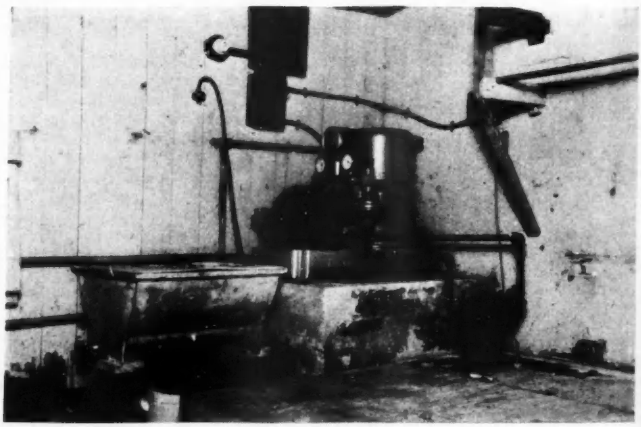
(*Continued from page* S6)

compiled by Research Director Geo. W. Kable, has been distributed to the State Project Directors and others interested in this phase of rural electrification.

Committees Selected

The present committee membership of the C. R. E. A. is as follows:

American Farm Bureau Federation: S. H. Thompson, M. L. Noon, M. S. Winder, Chairman. National Grange: L. J. Taber. Individual Plant Manufacturers: R. C. Cosgrove. American Society of Agricultural Engineers: J. B. Davidson. American Home Economics Association: Miss Eloise Davison. General Federation of Women's Clubs: Mrs. Alfred S. Knapp. National Association of Farm Equipment Mfrs.: O. B. Zimmerman, H. C. Beekman, Norman J. Gould. National Electric Light Association: Marshall E. Sampsell, G. C. Neff, Sec'y-Treas., Arthur Huntington, Eugene Holcomb. National Electric Manufacturers' Assn: C. W. Drake, Geo. A. Hughes, G. A. Waters, F. H. Winkley. U. S. Department of Agriculture: S. H. McCrory. U. S. Department of Commerce: Marshall T. Jones. U. S. Department of Interior: C. A. Bissell. Members at Large: J. W. Coverdale, J. C. Martin, J. R. Howard.



Electro-Scald installed next to a milk cooling outfit in milk room on Floyd Wilkins farm in Cortland County, N. Y.

Analyzing Farmer Prospects

J. K. MEADS*

THE traditional method of approach to the farm market seems to be the classification of farmer prospects into more or less arbitrary groups, viz., dairymen, stockmen, poultry raisers, etc.

Satisfactory as these general classifications may have been in the past, they do not form a sound basis for Central Station rural merchandising effort. The percentage of farmer customers engaged in a highly specialized type of farming is relatively small. The average farmer today is interested in many varied farming activities.

In merchandising the 2, 3, or 5 H.P. hammer-type feed mill farmer prospects may well be classified in four groups:

1. The farmer who buys prepared commercial feeds.
2. The farmer who patronizes the custom mill.
3. The farmer who uses a buhr mill, or an old-type hammer-mill.
4. The farmer who does not grind his feeds.

The Farmer Who Buys Prepared Commercial Feeds

Approximately $400,000,000 of prepared commercial feeds were purchased by American farmers last year. This staggering total gives a partial conception of the immense possibilities in the feed grinding field.

For the past few years manufacturers of commercial feeds have spent a good many millions educating the farmer to the advantages of proper feeding. It is one of the paradoxes of farm marketing that the intensive educational work of commercial feed manufacturers is today one of the greatest factors in creating farmer acceptance for the electrically operated hammer-type mill for grinding grain where it grows.

But such is the case. There is a growing trend towards grinding feeds on the farm. The farmer has been pretty thoroughly sold on the advantages of the balanced ration, but it does not require an abnormal amount of head work for him to figure out there is a considerable differential between the grains he sells at low market price and the commercial feeds he buys.

Savings Reported

In some instances, farmers who have ground their own grains and added proper minerals and proteins, according to formulae secured from their Experiment Stations, have reported savings of 25 to 40 per cent in feeding costs.

Alert manufacturers of commercial feeds are becoming aware of this trend towards feed grinding on the farm and are placing on the market mixtures especially compounded to supplement those raised on the farm.

The cost of custom grinding ordinarily ranges from 10 to 25 cents per hundred pounds. When you compare the cost of grinding with the small electrically operated hammer mill (for oats, approximately 1c per bushel), no further selling arguments are needed.

* * *

N. B.—In some communities custom grinding is done at an actual loss by the miller in order to increase trade in supplementary feeds and other side lines. Even where the grinding charge is considerably below 10c there can be no possibility of price competition with the 2, 3 or 5 H.P. Hammer Mill.

Suppose there were no monetary saving, the convenience of pushing a button and having an abundant supply of fresh feed automatically ground would outweigh any other considerations.

*Merchandising Service Division, Prater Pulverizer Company.

Fourth Annual Conference at Purdue

The tentative program for the fourth annual conference on Rural Electrification to be held at Purdue University, Lafayette, Indiana, under the direction of the Agricultural Experiment Station in cooperation with the Indiana Electric Light Association on October 23-25, 1930, is given herewith:

Thursday, October 23

Morning Session

9:00 A.M.—Registration.

10:00 A.M.—"Rural Electrification in Indiana," Director J. H. Skinner, Purdue University, Agricultural Experiment Station.

10:30 A.M.—"What the Power Companies Are Doing in Rural Electrification," Speaker from a PUBLIC utility.

11:30 A.M.—"Progress Report on Heating Water for Dairies with Electric Current."

Afternoon Session

1:30 P.M.—Inspection and discussion of feed grinders, electric brooders, stationary spraying equipment. Short talks to be delivered by Prof. F. W. Duffee, University of Wisconsin; W. J. Parvis, Indiana Electric Corporation; and a member of the Horticultural Department, respectively, on equipment.

Evening Session

7:30 P.M.—Entertainment by Rural Service Committee, Indiana Electric Light Association.

Friday, October 24

Morning Session

9:00 A.M.—Progress Report of experiments with stationary Spray Plants. Prof. C. L. Burkholder, Horticultural Dept., Purdue University.

9:40 A.M.—"Electric Current Pays Its Way on an Indiana Farm," Mr. Byron Legg, Windfall, Indiana.

10:20 A.M.—Reports of tests on use of light with growing chicks. Prof. R. E. Roberts, Poultry Dept., Purdue University.

11:00 A.M.—Progress report on feeding ground oats to hogs, steers, and lambs. Prof. F. G. King, Animal Husbandry Dept., Purdue University.

11:30 A.M.—Progress report on threshing with electric power. Member of Agricultural Engineering Dept., Purdue University.

Afternoon Session

1:30 P.M.—Same as Thursday afternoon with discussion of water systems by Prof. E. W. Lehmann, University of Illinois; milking machines by Prof. J. H. Hilton, Dairy Dept., Purdue University; and dairy water heaters by person to be selected.

Evening Session

6:30 P.M.—Informal dinner. Speakers of national reputation.

Saturday, October 25

Morning session beginning at 9 A.M. to be devoted to discussion of methods of merchandising farm electric equipment. Program being arranged by Rural Service Committee, N. E. L. A.

2:00 P.M.—Purdue vs. Wisconsin. A block of good seats is being held. Price $3.00 each. Send reservations to T. E. Hienton, Purdue University. Hotel reservations should be made early because of Homecoming crowd at Hotels Fowler or Lahr.

University of Wisconsin Annual Short Course

Below is given the program of the Third Annual Rural Electrification Short Course sponsored by the Wisconsin Committee on the Application of Electricity to Agriculture and the Wisconsin Utilities Association.

All sessions will start promptly at the time specified, and unless otherwise announced will be held at the Agricultural Engineering Building, University of Wisconsin, Madison, Wisconsin.

Address all inquiries and applications for hotel reservations to J. P. Schaenzer, Agricultural Engineering Department, College of Agriculture, Madison, Wisconsin.

Thursday, October 16

8:30 A. M.—Registration—Agricultural Engineering Building.

Program—9:30 A. M.

Progress in Agriculture—Noble Clark, Assistant Director of the Experiment Station.

Selling Rural Electrification—A. F. Tegen, The Milwaukee Electric Railway and Light Co., Milwaukee, Wis.

New Feed Grinding Facts—Prof. F. W. Duffee, Department of Agricultural Engineering.

Fineness of Grinding and Its Relation to Cost and Feeding Value—Prof. G. Bohstedt, Department of Animal Husbandry.

Afternoon—1:30

What Farmers Need in Electric Service—L. A. Markham, Janesville, Wis.

Electricity in the Farm Home—Mrs. E. J. Krueger, Berlin, Wis.

Essentials and Comparisons of Farm Ranges—Prof. Stella T.

Patton, Home Economics Department.
What the Electric Utilities Can Do for the Farmer—W. J. Rogan, County Agricultural Agent, Wausau, Wis.

Evening—6:30
Banquet—One Speaker—Entertainment.

Friday, October 17

Morning—9:00
The Dairy Situation Today—Prof. H. C. Jackson, Department of Dairy Husbandry.
Progress in Dairy Refrigeration—Herbert White, Wisconsin Power and Light Co., Lake Geneva, Wis.
Dairy Water Heating—C. C. Bell, Wisconsin Valley Electric Co., Wausau, Wis.
Cleaning Dairy Utensils — Prof. E. G. Hastings, Department of Agricultural Bacteriology.

Afternoon—1:30
Experiences with Electric Brooders in 1930—Truman E. Heinton, Purdue University, Lafayette, Indiana.
Extension Methods—E. R. Meacham, Wisconsin Power and Light Co., Madison, Wis.

3 P. M.
Inspection of equipment in Operation on University Farms.

Saturday, October 18

Morning—9:00
Essentials of Poultry Brooding —Prof. J. G. Halpin, Department of Poultry Husbandry.
Mechanical Dairy Barn Ventilation—J. L. Strahan, Louden Machinery Co., Fairfield, Iowa, J. P. Schaenzer, Department of Agricultural Engineering.

Salesmen's Forum

(*Continued from page* S4)

another case a large box had been located just above the hopper of the grinder and is so arranged that a constant supply of grain passes from it into the hopper.

Where it is not possible to locate the grinder under or adjacent to grain bins or corncribs, its location will undoubtedly be determined by the location of the ground feed bins. Locating the grinder directly above the feed bin or beside it may eliminate one-half of the labor required in grinding which is spent in handling the ground feed.

One very practical method of eliminating labor of handling ground grain, although limited in application, is where the ground grain drops from the mill, mounted on the mow floor, directly into the feed box on the floor below. This type of installation, however, is usually confined to bank barns.

Where building construction does not permit of the gravity method of disposing of ground grain, a blower or elevator may be used to move the grain away from the grinder. The blower usually elevates the grain from the grinder into the dust collector and bagger. Overhead feed bins are often used for storage of grain where a blower is available.

Storage Methods Vary

In one installation the elevator lifted the grain from the grinder to a height sufficient to drop it into a wagon box or into the top of a feed storage bin. Where none of this equipment is available and type of barn construction does not permit, the grain is scooped away from the grinder. The construction of a small storage bin around the grinder permits the ground grain to accumulate for some time and eliminates the necessity for constant scooping. It is entirely possible and practical by raising the grinder higher off the floor to put casters on this bin and use it as a portable feed box.

A recent circular on the installation of motor-driven feed grinders written by the author of this article, containing illustrations of four installations is available from the Agricultural Engineering Department of Purdue University at Lafayette, Indiana.

Smith Incubators Approved by Underwriters

The Smith Incubator Company announces that the Smith 52,000 Electric and the Smith Junior 30,000 Electric incubators have been approved as standard by the Underwriters Laboratories, Inc., enabling the user to readily obtain insurance at favorable rates. The fire risk has been reduced to the lowest possible point. Both of the Smith Electrics can be operated without worry over fire hazards. The addition of safety to service, performance, economy and profit of Smith incubators, makes them more than ever desirable hatchery equipment for progressive hatcherymen.

Bob's Page

Devoted to Merchandising of Electrical Equipment in Rural Communities

Conducted by Robt. J. Fulton

Electricity—What Is It?

LAST April we compared the energy flowing through the electric wires to water flowing through water pipes. This month we are continuing to show that electricity is not so mysterious as some people believe. The changes that take place in electricity are no more wonderful than those that take place when water changes from liquid to solid, or from steam to vapor. All our lives we have been accustomed to the changes that occur in water while electricity is a comparatively new subject.

Comparison of Terms

The pressure between the electric wires, or in them, is measured in volts. A volt is nothing more than the unit of electric pressure. It is the same as the pressure of water in water pipes. The rate at which water flows through the water system is measured in gallons per minute while the rate at which electricity flows through the electrical system is measured in amperes. Therefore, an ampere is the unit indicating the rate at which the current is flowing.

Facts that hold true in the water system are also true in electricity. That is, if the voltage of electrical pressure is increased, the current can be decreased to furnish a given amount of power. When a high votlage is used, a correspondingly smaller amount of current is needed. Consequently smaller wires can be employed.

In transmitting power there are two important elements to be considered, viz. "force," and "rate of movement." When the pressure in a water pipe forces the water through the pipe, work is being done as the water motor is operating. If the water pressure was not being utilized in some manner but simply allowed to flow through the pipe, no work would be done. This same principle also applies to electricity. "Force" is measured in volts, and the "rate of movement," commonly called "rate of flow," in amperes. Then the units that compare with pressure and rate of flow are volts and amperes.

Force multiplied by rate of flow is power. In electricity, the force in volts, multiplied by the rate of flow in amperes, equals power. For instance, if a volt meter testing a line shows 100 volts, and an ammeter shows 10 amperes, these two factors multiplied would be 100 x 10 or 1,000. While the result secured by multiplying these two factors could be called volt-amperes, it is known as "watts," being named after James Watt, the inventor of the steam engine.

Another term which is commonly employed in electricity is "kilowatt." This is equal to 1,000 watts, kilo meaning one thousand. Therefore, if we say two kilowatts, we mean two thousand watts. The relation between watts and horsepower is this: 746 watts are equal to one horsepower. For all practical purposes, a horsepower equals 750 watts. Then 1,000 watts, or a kilowatt, equals 1-1/3 horsepower, and a horsepower is three-fourths of a kilowatt.

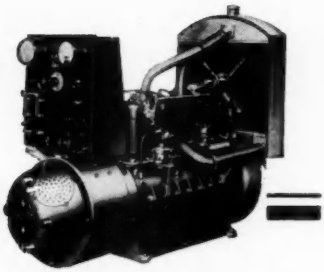
Computing Cost

In computing the cost of electricity there are two things which regulate it. First, the amount of power required and second, the length of time it is used. Figuring power costs is very much the same as hiring a horse from a livery stable. If the horse is used for one hour, it will not cost as much as

(*Continued on page* 14)

UNIVERSAL ELECTRIC PLANTS

The Most Complete Line



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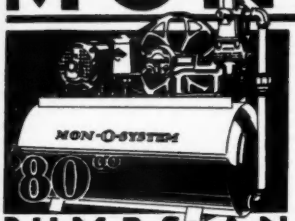

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Cap. 250 gal. per hr. 20 gal. galvanized tank . . . completely assembled, ready to install—all for only $80.00.

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There are millions of farms who can't get central station electric service. Every one of these is a prospect for a home lighting set.
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A. ENGINE DRIVEN SETS
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Identify by letter and use the coupon on the inside back cover to get further information on any of these items

if it is used all day. A kilowatt hour (K.W.H.) means the use of one kilowatt of power for one hour of time. The rate charged for the use of electric power is based on the kilowatt hour. Just how much electricity is costing can be figured by multiplying the number of watts shown on the meter by the number of hours they are used. This will give you the exact number of kilowatt hours used. When this sum is found, multiply it by the rate charged by the electric light company, and you have the cost of electricity for that given time.

Electricity An Energy

The thing that makes electrical apparatus appear difficult to understand is that electricity is not susceptible to any of our commonly used senses. We call electricity a farm energy the same as we call heat a farm energy. To understand what is meant by heat all we have to do is to feel a piece of iron that has been warmed on a stove, and then feel a piece of ice. Our sense of feeling has qualified us to compare any temperature between these two extremes. Our eyes give us a general understanding of light, and our ears of the subject of sound, due to the fact that they affect one of our senses. While it is true that the nature of energy we call electricity is not known, its behavior is well known, and a knowledge of electrical apparatus is merely a knowledge of this behavior. Electricity is not put to work in the same manner as heat in the steam and gas engine, or water in the water turbine. We provide electricity with a circuit of wires and transmit it through this circuit in order to get the benefit of the effect of that current of energy.

Electricity has four effects. They are: heating effect, chemical effect, magnetic effect and the effect on the human body. The heating effect is used in light globes, heaters, toasters, etc. The light globe consists of a thin metal filament in a bulb from which the air has been exhausted. When the current is forced through this filament, it becomes white hot and gives off light and also some heat. The chemical effect is used in plating and with storage batteries. The magnetic effect is used in connection with motors. The effect on the human body is the high pressure current stimulating the nerves to action in what we call "electric shock."

Electricity is used in all gas engines to fire or ignite the charge of gas in the engine cylinder. The modern method of doing this is to cause electricity to jump a gap in a circuit that leads into the cylinder. This gap is in the spark plug. It requires a high pressure to force electricity to pass through the gas mixture due to the fact that gas is a poor conductor of electricity. Therefore, the larger the gap, the higher the pressure necessary to create the spark. In order to increase the electric pressure sufficiently to enable it to jump the spark plug gap, an ignition coil is used. In a later issue we will consder this subject.

Convention Dates

NATIONAL ASSOCIATION OF FARM EQUIPMENT MANUFACTURERS, annual convention, Congress Hotel, Chicago, Ill., Oct. 8-10. H. J. Sameit, Secretary, 608 S. Dearborn St., Chicago, Ill.

NATIONAL DAIRY SHOW, annual convention, St. Louis, Mo., Oct. 11-19.

RURAL BUSINESS COMMITTEE, Empire State Gas & Electric Association, quarterly meeting, Rochester, N. Y., Oct. 15. C. B. Chapin, Sec., Grand Central Terminal Bldg., New York City.

NORTHEASTERN SECTION, AMERICAN SOCIETY AGRICULTURAL ENGINEERS, Rochester, N. Y., Oct. 16, 17, 18. Headquarters at Seneca Hotel.

WISCONSIN SHORT COURSE, third annual rural electrification short course at University of Wisconsin, October 16, 17, 18, 1930. Address inquiries to J. P. Schaenzer, Agri. Engrg. Dept., College of Agriculture, Madison, Wis.

RURAL ELECTRIFICATION SHORT COURSE, Purdue University, Lafayette, Ind., Oct. 23, 24, 25. T. E. Hienton, Director.

RURAL ELECTRIFICATION CONFERENCE, to be held at Texas Agricultural and Mechanical College, October 30, 31 and November 1, 1930. P. T. Montfort, Agricultural Engrg. Dept., A. & M. College, College Station, Director.

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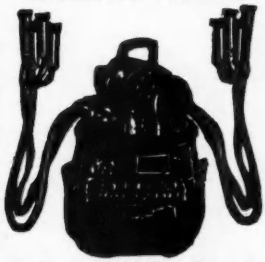
Blue Ribbon Electric Milker



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House Heating Survey

The data below, secured directly from readers of this publication, presents some interesting information on farm home heating. This survey covered 2797 farms in 44 States and Canada.

State	No. of Farms	Stove	Furnace	Hot Air	Hot Water	Steam	Wood	Coal	Gas	Oil Burning
Alabama	32	18	1	..	..	..	19	23	..	..
Arkansas	39	28	3	2	4	1	24	12	5	6
California	4	1	1	..	..	..	1	...	2	..
Colorado	16	13	4	1	2	..	1	10	..	..
Connecticut	52	25	27	15	8	6	30	33	1	9
Delaware	16	11	8	6	..	2	10	11	..	..
Florida	36	17	2	1	2	1	19	...	..	2
Georgia	15	8	1	..	2	1	8	12	..	2
Idaho	61	42	14	4	4	..	18	48	..	1
Illinois	191	91	90	56	16	6	47	134	3	5
Indiana	125	65	50	25	6	1	33	95	5	5
Iowa	72	33	40	26	5	2	27	50	..	2
Kansas	90	54	33	21	3	..	50	53	8	5
Kentucky	53	30	10	2	2	..	11	38	3	2
Louisiana	21	12	...	..	..	..	13	4	3	3
Maine	29	23	6	3	1	..	22	6	..	1
Maryland	45	25	16	5	5	3	12	23	..	2
Massachusetts	43	21	20	5	6	5	20	23	..	..
Michigan	297	167	116	68	10	8	136	179	3	15
Minnesota	98	54	42	22	8	4	55	56	..	2
Mississippi	8	4	...	..	..	..	1	6	1	1
Missouri	17	8	4	2	2	2	7	9	1	..
Montana	5	3	2	1	..	..	1	5	..	..
Nebraska	40	18	20	12	2	..	17	23	..	2
Nevada	4	2	...	..	.	..	2	3	..	..
New Hampshire	8	4	4	2	..	..	4	2	..	..
New Jersey	50	15	24	18	12	6	9	29	2	3
New York	201	113	101	41	16	9	95	121	3	5
North Carolina	4	3	...	..	..	..	...	2	..	..
North Dakota	5	3	1	..	..	..	...	1	..	..
Ohio	168	65	103	61	11	2	51	117	5	6
Oklahoma	27	17	2	2	..	1	5	14	8	2
Oregon	69	49	14	6	1	1	54	7	..	..
Pennsylvania	224	103	102	40	33	8	68	142	12	6
South Carolina	3	...	...	..	..	..	3	...	..	..
South Dakota	8	3	6	4	1	..	3	7	..	1
Tennessee	9	6	1	..	..	..	1	7	..	..
Texas	43	21	2	1	..	..	19	13	8	6
Vermont	11	6	5	4	..	..	6	5	..	..
Virginia	135	94	18	8	8	1	69	73	..	6
Washington	48	37	4	5	2	..	38	7	..	1
West Virginia	11	5	4	1	1	1	1	7	3	..
Wisconsin	354	161	102	91	25	8	214	177	3	11
Wyoming	7	5	1	..	..	..	7	...	1	..
Canada	3	2	2	..	..	..	3	...	..	..
Totals	2797	1485	1006	561	198	79	1234	1587	80	112
Percent		53%	35%	20%	7%	2%	44%	56%	2%	4%

*Where neither stoves nor furnaces were checked on the questionnaire, it has been assumed that open fires or the kitchen stove were the only available home heating equipment.